

ABSTRACT

An improved pixel cell is disclosed for use in an imager device, the pixel cell having increased signal to noise ratios, and a larger charge storage capacity. Each pixel cell contains two storage nodes in parallel with each other and also in series with the floating diffusion region. During applications requiring lower storage capacity, one of the storage nodes is activated. During applications requiring higher storage capacity, the second storage node is activated sequentially after the first storage node is activated. Thereafter, the full charge stored by both storage nodes is read out by the pixel readout circuit. Further, in accordance with an exemplary embodiment of the invention, one of the storage nodes is obtained by an additional transfer gate and diffusion node connected to a physical capacitor within the pixel cell and the other storage node is formed by a storage gate covering an additional depletion area between the photodiode and the floating diffusion region.